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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/728,405	02/12/2004	Nathaniel S. Fox	04017.00066	9728

22908 7590 03/17/2006

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EXAMINER

MAYO, TARA L

ART UNIT PAPER NUMBER

3671

DATE MAILED: 03/17/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/728,405	FOX, NATHANIEL S.	
	Examiner	Art Unit	
	Tara L. Mayo	3671	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 December 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 60-76 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 60-76 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12 February 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>6/3/05 and 11/23/05</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Information Disclosure Statement

1. The Soviet reference listed on the Information Disclosure Statement filed 03 May 2005 has been reconsidered and initialed by the Examiner.
2. The references lined through on the Information Disclosure Statement filed 23 November 2005 have already been considered.

Drawings

3. The drawings were received on 27 December 2005. These drawings are acceptable.
4. The drawings are objected to under 37 CFR 1.83(a). The drawings must show every feature of the invention specified in the claims. Therefore, the sacrificial cap comprising a transaxial plate member and a rod member extending from the plate member into the hollow tube as set forth in claims 28 through 30 must be shown or the feature(s) canceled from the claim(s). No new matter should be entered.

Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must

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be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

5. Claim 61 is objected to because of the following informalities: inconsistent claim language. Throughout claim 61, make the first and second diameters consistently either "outside" and "outer." Appropriate correction is required.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

7. Claims 72 through 74 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the

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claimed invention. The Specification as originally filed fails to provide support for a sacrificial cap comprising a transaxial plate member and a rod member extending from the plate member into the hollow tube. Specifically, Applicant shows the sacrificial cap embodiment of the claimed invention in Figures 8A through 8C, 16 and 23 and discloses the same as being used in lieu of a sliding valve and a transaxial plate and rod. See the Specification at paragraphs 29, 30, 62 and 66.

8. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

9. Claims 63, 72 through 74 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

With regard to claim 63, the scope of the claimed invention is indefinite because Applicant defines the tube relative to the size of the aggregate. Specifically, the aggregate particles are not positively claimed.

With regard to claim 72, the scope of the claimed invention is indefinite because it is unclear how a sacrificial cap can be attached to a rod member.

Claim Rejections - 35 USC § 102

10. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

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A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

11. Claims 60, 61, 75 and 76 are rejected under 35 U.S.C. 102(b) as being anticipated by Visconti (U.S. Patent No. 5,152,639).

Visconti '639, as seen in Figures 1 and 2 and 3 through 5, shows an apparatus (10) for construction of a soil reinforcement member in a soil matrix comprising, in combination:
with regard to claim 60,

a tube (11) with a first outside diameter;

a unitary bottom head element (15) at the open discharge end having a second outside surface diameter greater than the first outside diameter and configured to provide a combination of axial and transaxial stress components (i.e., downwardly and outwardly via the walls of the head element) and further including an opening and closing mechanism (13 and 14, in combination); and

a sacrificial head element (12);

with regard to claim 61,

a tube (11) with a first outside diameter;

a unitary bottom head element (15) at the end of the tube having a second outside surface diameter greater than the first outside diameter and configured to provide a combination of axial and transaxial stress components (i.e., downwardly and outwardly via the walls of the head element) and further including an opening and closing mechanism (13 and 14, in combination);
and

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with regard to 75,

wherein the head element and hollow tube have a uniform cylindrical cross sectional profile; and

with regard to claim 76,

a tube (11) and a bottom head element (15); and

a closure mechanism (13 and 14, in combination).

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

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14. Claims 62 and 65 are rejected under 35 U.S.C. 103(a) as being unpatentable over Visconti (U.S. Patent No. 5,152,639) in view of Ogawa (U.S. Patent No. 3,772,892) and Pao Chen (U.S. Patent No. 3,869,869).

Visconti '639 fails to teach:

with regard to claim 62,

a fluid feed mechanism and a solid material feed mechanism; and

with regard to claim 65,

a hopper and at least one auxiliary feed tube.

Ogawa '892, as seen in Figure 1, discloses an apparatus for constructing a pier in a soil matrix comprising:

an elongate hollow tube (1) having a longitudinal axis, a top material entrance end (2), an open bottom material discharge end;

a solid material feed mechanism (3) for feeding aggregate material into the hollow tube entrance end; and

a hopper feed mechanism (3) connected to the top material entrance end of the hollow tube.

Pao Chen '869, as seen in Figures 1 and 2, discloses a device for casting cement-sand grout piles in a soil matrix (13), the device comprising a hollow tube (1) and a shaped bottom head element/valve device (4) comprising the open discharge end configured to provide axial and transaxial stress components onto the soil matrix, wherein the bottom head element/valve

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device is attached to the hollow tube and includes a mechanism (5) having a beveled external surface for closing and opening the discharge end of the hollow tube; the device further including at least one auxiliary feed tube (10) connected to the hollow tube through an opening in the hollow tube end for feeding cementitious grout (col. 3, lines 10 through 13) into the lower end of the hollow tube, wherein the fluid feed tube includes means (11) for selectively opening and closing the fluid feed tube.

With regard to claims 62 and 65, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the device disclosed by Visconti '639 with a solid feed mechanism or hopper as taught by Ogawa '892. The motivation would have been to provide means with which to feed aggregates to the tube.

With regard to claims 62 and 65, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the device disclosed by Visconti '639 with a fluid feed mechanism or auxiliary tube as taught by Pao Chen '869. The motivation would have been to supply an additional, fluid material to the tube for discharge with the aggregate into the soil matrix.

15. Claims 63, 67 and 69 through 71 are rejected under 35 U.S.C. 103(a) as being unpatentable over Visconti (U.S. Patent No. 5,152,639) in view of Ogawa (U.S. Patent No. 3,772,892).

Visconti '639 further teaches:
with regard to claim 63,

the tube being circular.

Visconti '639 fails to teach:

with regard to claim 63,

an aggregate feed mechanism;

the tube being at least four times the maximum;

with regard to claim 67,

a hopper;

with regard to claims 69 through 71,

a force mechanism.

Ogawa '892, as seen in Figure 1, discloses an apparatus for constructing a pier in a soil matrix comprising:

an elongate hollow tube (1) having a longitudinal axis, a top material entrance end (2), an open bottom material discharge end;

a solid material feed mechanism (3) for feeding aggregate material into the hollow tube entrance end; and

a hopper feed mechanism (3) connected to the top material entrance end of the hollow tube;

further including a force mechanism (2) connected to the hollow tube for providing a downwardly direct static axial force (via the still weight of element 2); and

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a force mechanism (2) for providing an optional force on the hollow tube, the force being a vertically reciprocating force or a vertically vibrating dynamic axial force (col. 3, lines 42 through 49).

With regard to claims 63 and 67, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the device disclosed by Visconti '639 with a solid feed mechanism or hopper as taught by Ogawa '892. The motivation would have been to provide means with which to feed aggregates to the tube.

With further regard to claim 63, it would have been obvious to one having ordinary skill in the art at the time the invention was made to make the internal diameter of the hopper of the device shown by Ogawa '892 no smaller than at least four times the maximum size dimension of the largest item of aggregate material. The motivation would have been to prevent clogging of the hopper during use.

With regard to claims 69 through 71, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the device taught by Visconti '639 such that it would further include a force mechanism as taught by Ogawa '892. The motivation would have been to facilitate insertion of the tube into the soil matrix.

16. Claim 64 is rejected under 35 U.S.C. 103(a) as being unpatentable over Visconti (U.S. Patent No. 5,152,639) in view of Pao Chen (U.S. Patent No. 3,869,869).

Visconti '639 fails to teach:
with regard to claim 64,

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at least one auxiliary feed tube connected to the hollow tube through openings in the hollow tube.

Pao Chen '869, as seen in Figures 1 and 2, discloses a device for casting cement-sand grout piles in a soil matrix (13), the device comprising a hollow tube (1) and a shaped bottom head element/valve device (4) comprising the open discharge end configured to provide axial and transaxial stress components onto the soil matrix, wherein the bottom head element/valve device is attached to the hollow tube and includes a mechanism (5) having a beveled external surface for closing and opening the discharge end of the hollow tube; the device further including at least one auxiliary feed tube (10) connected to the hollow tube through an opening in the hollow tube end for feeding cementitious grout (col. 3, lines 10 through 13) into the lower end of the hollow tube, wherein the fluid feed tube includes means (11) for selectively opening and closing the fluid feed tube.

With regard to claim 64, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the device disclosed by Visconti '639 with a fluid feed mechanism or auxiliary tube as taught by Pao Chen '869. The motivation would have been to supply an additional, fluid material to the tube for discharge with the aggregate into the soil matrix.

17. Claim 66 is rejected under 35 U.S.C. 103(a) as being unpatentable over Visconti (U.S. Patent No. 5,152,639) in view of Colle (U.S. Patent No. 3,270,511).

Visconti '639 fails to teach:

with regard to claim 66,

passageway openings in the hollow tube above the bottom head element for fluid materials within the hollow tube to flow out of the hollow tube above the bottom head element and outside of the hollow tube into an annulus formed between the hollow tube and the soil matrix.

Colle '511, as seen in Figures 4 and 5, discloses a method for forming structural members (90) in the ground comprising the step of discharging fluid materials from a hollow tube (80) into an annulus through openings (84) positioned above a head element (82).

With regard to claim 66, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the device disclosed by Visconti '639 such that it would include openings as taught by Colle '511. The motivation would have been to discharge material radially from the tube.

18. Claim 68 is rejected under 35 U.S.C. 103(a) as being unpatentable over Visconti (U.S. Patent No. 5,152,639) in view of Ogawa (U.S. Patent No. 3,772,892) and Kato et al. (U.S. Patent No. 6,540,443 B2).

Visconti '639 fails to teach:

with regard to claim 68,

a hopper and at least one isolation damper connecting the hopper to the hollow tube.

Ogawa '892, as seen in Figure 1, discloses an apparatus for constructing a pier in a soil matrix comprising:

an elongate hollow tube (1) having a longitudinal axis, a top material entrance end (2), an open bottom material discharge end;

a solid material feed mechanism (3) for feeding aggregate material into the hollow tube entrance end; and

a hopper feed mechanism (3) connected to the top material entrance end of the hollow tube.

With regard to claim 68, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the device disclosed by Visconti '639 with a solid feed mechanism or hopper as taught by Ogawa '892. The motivation would have been to provide means with which to feed aggregates to the tube.

Kato et al. '443, as seen in Figure 2, show a ground-boring system (1) including a damper (123) for absorbing shocks during operation and preventing damage to the system (col. 6, lines 1 through 6).

With regard to claim 68, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the device shown by Visconti '639 such that it

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would include a damper, as taught by Kato et al. '443, between the hopper and the hollow tube for absorbing shocks and preventing damage to the hopper.

Response to Arguments

19. Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

20. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tara L. Mayo whose telephone number is 571-272-6992. The examiner can normally be reached on Monday through Friday 8:30 AM to 5:00 PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas B. Will can be reached on 571-272-6998. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



JLM

12 March 2006



Thomas B. Will
Supervisory Patent Examiner
Group 3600

12/27/2005 17:25 FAX 13124635001

BANNER & WITCOFF

015/018

U.S. Serial No.: 10/728,405 Any. Dkt. No.: 004017.00066

Inventor: Nathaniel S. Fox

Title: Apparatus and Method for Building Support Piers from One or Successive Lifts Formed in a Soil Matrix
Replacement Sheet is one of two

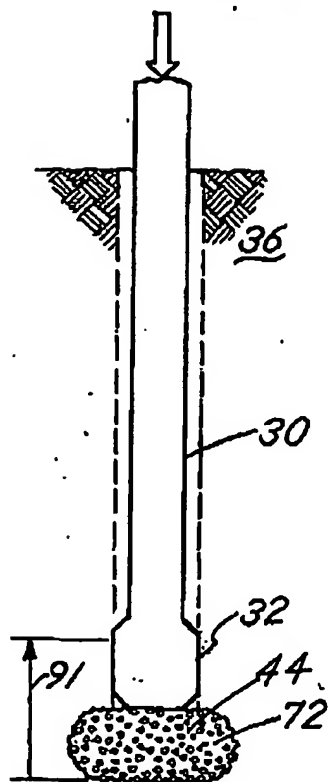


FIG. 9

FIG. 12

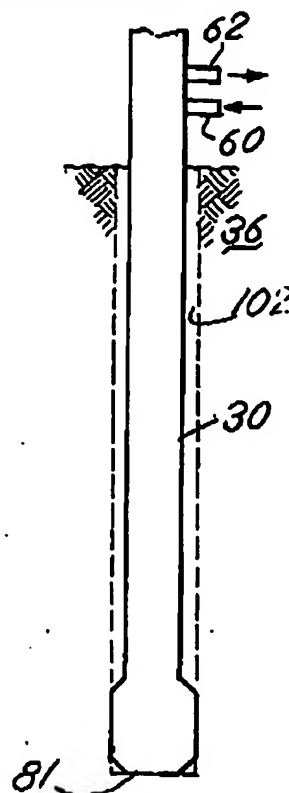
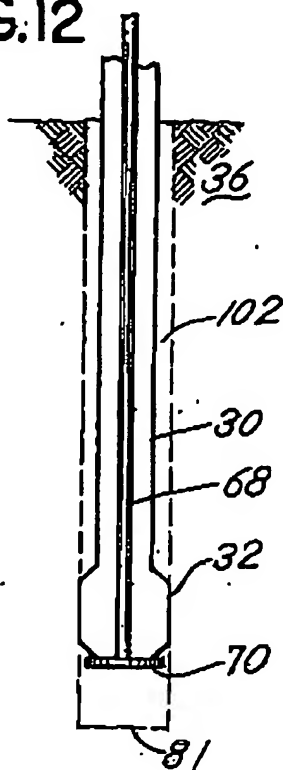


FIG. 13

FIG. 10

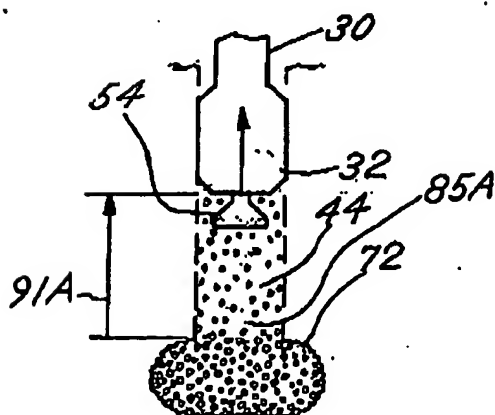
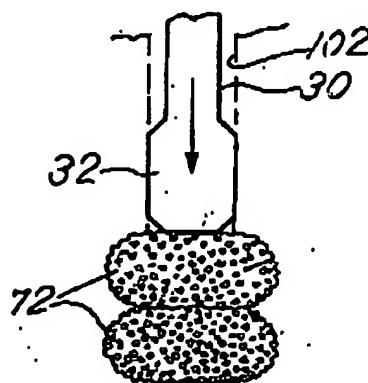


FIG. 11



12/27/2005 17:25 FAX 13124635001

BANNER & WITCOFF

016/018

U.S. PATENT NO. 10,740,000 APP. NO. 10,740,000

Inventor: Nathaniel S. Fox

Title: Apparatus and Method for Building Support Piers from One or Successive Lifts Formed in a Soil Matrix
Replacement Sheets two of two

FIG.14

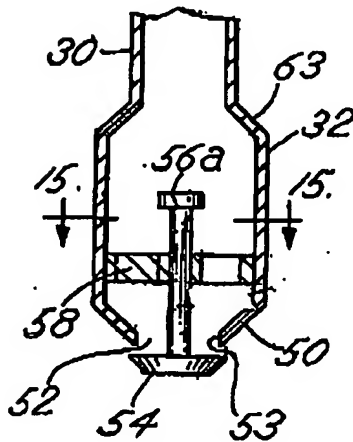


FIG.16

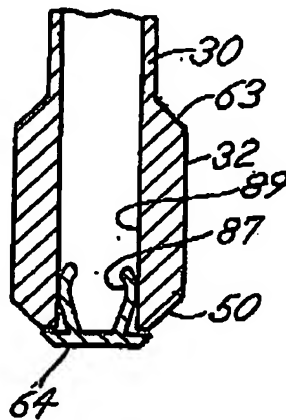


FIG.17

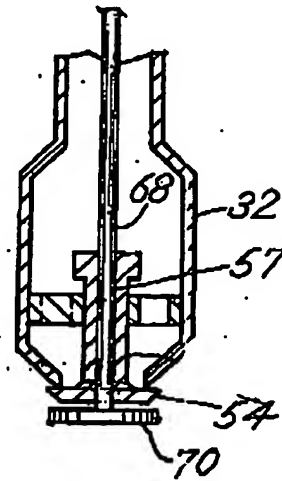


FIG.18

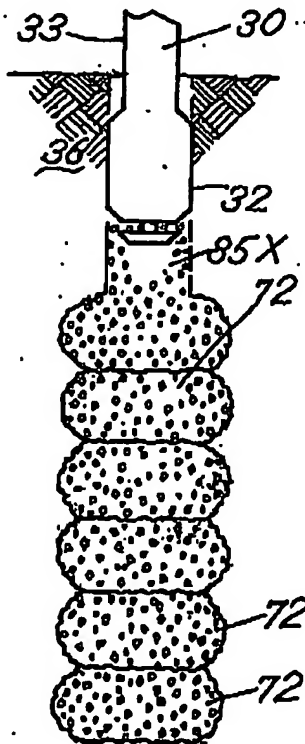


FIG.19

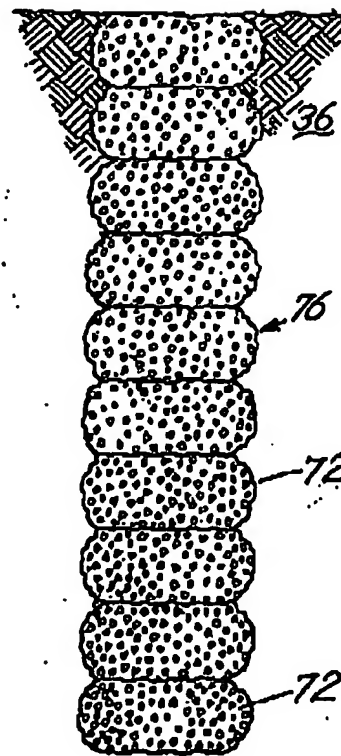


FIG.15

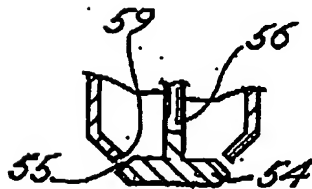
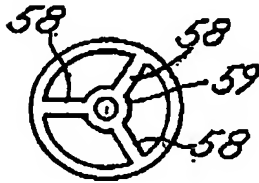


FIG.15A